

WHAT IS CLAIMED IS:

1. In a communication network, a method for resource bundling comprising the steps of:
 - a) receiving, at a network policer, a plurality of data flows having different class of service (CoS) priority levels, said data flows associated with a single user having an allocated bandwidth;
 - b) processing said data flows while sharing said allocated bandwidth between said different CoS priority levels in a prioritized manner; and,
 - c) forwarding said processed data flows to the communications network.
2. The method of claim 1, wherein each said data flow includes at least one data packet of a respective CoS priority level, said at least one data packet having a data packet length, and wherein said step of processing includes, for each said data packet:
 - i. providing a threshold associated with each said CoS priority level;
 - ii. calculating a tentative credit value for said data packet; and,
 - iii. forming a forwarding decision based on a comparison between said tentative credit value and said threshold associated with said CoS priority level.
3. The method of claim 2, wherein said forming a forwarding decision includes accepting said data packet if said tentative credit value is lower than a CoS threshold, and rejecting said data packet if said tentative credit value exceeds said CoS threshold.
4. The method of claim 2, wherein said providing a threshold associated with each said CoS includes providing a CoS threshold that defines a permitted burst size for said CoS priority level.
5. The method of claim 2, wherein said providing a threshold associated with each said CoS includes providing a threshold that has a configurable value.

6. The method of claim 3, wherein said calculating a tentative credit value includes deducting said data packet length from an available credit value.

7. The method of claim 6, wherein said available credit for a j^{th} data packet received at a time t_j is calculated using the formula $C_j = \min[CBS, C_{j-1} + CIR \times (t_j - t_{j-1})]$, wherein said CBS is a committed burst size and wherein said CIR is a committed information rate.

8. The method of claim 6, wherein the step of accepting said data packet further includes:

- A. setting said tentative credit value to equal said available credit value;
- B. marking said data packet with a color tag that defines a permitted rate for said data packet; and,
- C. transmitting said color tagged data packet on the network.

9. The method of claim 8, wherein said transmitting said color tagged packet on the network includes transmitting said color tagged packet on a network selected from the group consisting of an Ethernet network and a metro Ethernet network.

10. The method of claim 1, wherein said step of processing includes processing said data flows using a computer implemented code.

11. A method for resource bundling in a communications network comprising the steps of:

- a) at a network policer dedicated to a user, receiving a plurality of data flows comprising a plurality of data packets having corresponding packets lengths, said data flows belonging to at least two different class of service (CoS) priority levels;

- b) for each data packet of said plurality of data packets, performing a prioritized conformance test to accept or reject said data packet; and
- c) responsive to said conformance test, further processing each said data packet.

12. The method of claim 11, wherein said step of further processing includes:
- i. for accepted data packets of said plurality, forwarding all said accepted data packets regardless of their respective CoS priority level to the communications network; and,
 - ii. for rejected data packets of said plurality, forwarding said rejected data packet to a lower level network policer for further processing,
13. The method of claim 11, wherein said step of performing a conformance test includes performing a test involving a CoS related threshold parameter and a tentative credit value and performing a comparison between said CoS related threshold parameter and said tentative credit value.
14. The method of claim 13, wherein said providing a tentative credit value includes calculating said tentative value by deducting said packet length from an available credit value.
15. The method of claim 14, wherein said available credit for a j^{th} data packet received at a time t_j is calculated using the formula $C_j = \min[CBS, C_{j-1} + CIR \times (t_j - t_{j-1})]$, wherein said CBS is a committed burst size and wherein said CIR is a committed information rate.
16. The method of claim 13, wherein said providing a CoS related threshold corresponding to each said CoS priority level includes providing a CoS threshold that defines a permitted burst size for said CoS priority level.

17. The method of claim 13, wherein said providing a CoS related threshold includes providing a configurable threshold value.
19. The method of claim 17, wherein said configurable threshold value is equal at most to a value selected from the group consisting of a committed burst size (CBS) value and an excess burst size (EBS) value.
20. The method of claim 12, wherein the step of forwarding said accepted data packet to said communications network further includes marking said data packet with a color tag that defines a permitted rate for said data packet.
21. The method of claim 20, wherein said marking said data packet with a color tag that defines a permitted rate includes choosing a rate selected from the group consisting of a committed information rate (CIR) and an excess information rate (EIR).
22. The method of claim 11, wherein said step of processing includes processing said data flows using a computer implemented code.
23. A system operative to bundle resources in a communications network, comprising:
- a) a plurality of network policers dedicated to a user, each said policer operative to share a plurality data flows bandwidth allocated to said user in a prioritized manner, wherein said data flows belong to a plurality of different class of service (CoS) priority levels; and
 - b) a corresponding plurality of coloring units, each coloring unit coupled to a respective network policer and used to color data packets of said data flows processed in said respective policer,
- whereby the system allows said single user to aggregate multiple CoS, hence enabling a low priority CoS to consume bandwidth when a high priority CoS is idle.

24. The system of claim 23, wherein said operativeness of said network policer to process a plurality of data flows having different classes of service (CoS) is facilitated by:

- i. a receiver operative to receive incoming data packets belonging to said plurality of data flows, each said data packet having a packet header and a packet length,
- ii. a determination unit coupled to said receiver and operative to determine, for each said data packet, a respective CoS priority level and packet length,
- iii. a computing unit coupled to said determination unit and operative to compute a tentative credit value based on said data packet length and on an available credit value, and
- iv. a comparator coupled to said determination unit and said computing unit and operative to perform, for each said data packet, a comparison between a CoS priority related threshold parameter and said tentative credit value to determine if said data packet can be accepted for transmission to the network.

25. The system of claim 23, wherein said network policer further includes a transmitter coupled to said receiver and said comparator and used for forwarding each said accepted data packet to the network.

26. The system of claim 23, wherein said tentative credit value is calculated by deducting said packet length from an available credit value.

27. The system of claim 24, wherein said CoS related threshold parameter includes a configurable threshold value.

28. The system of claim 27 wherein said configurable threshold value equals at most a value selected from the group consisting of a committed burst size (CBS) value and an excess burst size (EBS) value.

29. The system of claim 23, wherein said coloring unit includes a coloring mechanism for marking said data packet with a color tag that defines a permitted rate for said data packet.

30. The system of claim 29, wherein said permitted rate is a rate selected from the group consisting of committed information rate (CIR) and an excess information rate (EIR).

31. The system of claim 24, wherein said network is selected from the group consisting of an Ethernet network and a metro Ethernet network.

32. The system of claim 23, wherein said networks policers are cascaded.